2021 Seed Trials: Results and Observations

Master Gardener Volunteer Program

In 2021, 228 Extension Master Gardener volunteers from 49 Minnesota counties in three different biomes tested onions, cayenne peppers, kale, dill, delicata squash, white cosmos, ground cherries, and tall yellow marigolds. Our goal is to provide Minnesota home gardeners with unbiased, research-based advice as to which varieties of various plants grow best in our state. We are proud to share the results of the 2021 trials here.

Each trial compared six different varieties of one plant species. The Master Gardeners who participated did not know the identities of the varieties. Sowing and growing instructions were clear and direct, and we believe they were followed. In addition, monthly Zoom meetings were held in order to clarify issues and discuss/solve problems.

Minnesota has a continental climate – meaning that our weather is unmediated by oceans and tends to be extreme. Growing conditions are different every year. Basically, it was a hot, dry summer in most of the state, with rain falling only toward the end and only in certain locations.

DELICATA SQUASH: summary of results as submitted by a seed trial committee member

Delicata squash seeds were directly seeded into gardens at a depth of one inch after the soil had warmed up to a minimum temperature of 70˚. Some of the varieties benefited from trellises. Row covers to fight pests were advised until plants flowered. Last, it was also recommended that the squash be mulched to guard against pests, conserve moisture, and eliminate weeds. Harvest times ranged between 80 and 100 days.

Delicata squash have great nutritional benefits, and there's no need to peel outer skin. One squash yields one or two dining portions. One cup of Delicata squash provides a great source of vitamins A and C, fiber, lutein, potassium, folate, and 80 calories. Delicata squash is easily stored at room temperature for up to three months.

The information below includes test results for the six varieties of Delicata squash tested by 51 participants including germination, taste, plant growth, overall ranking, and plant health. Between 34-38 participants gave overall rankings for each of the six Delicata squash varieties. A sampling of their comments are given below. All six of the varieties were fairly close in ranking. Comments tell us that people are very personal in their tastes. Growing conditions, which vary from one garden to the next may make a difference in the end result. All six received positive comments.

Codes for Delicata Squash: CF = Bush AAS 100, DK = Honeyboat, MB = Johnny's JS, LG = Sweet Potato, JH = Zeppelin, and ST = Jester

#1. Bush AAS 100 (CF)

'Bush AAS 100' was slightly ahead of #2, 'Honeyboat', in its overall score. It had a germination rate of 67%, and its first flowering date was July 17. Unlike some of the other squash, it was a bush variety. Its average fruit diameter was 5.36 inches, average length was 6 inches, and average weight was 14.42 ounces. Average fruit per plant was 5.72. A majority of the gardeners gave it an average rank for sweetness and good taste. Insect damage was at 16%, close to the other five varieties. Like the other varieties, seven gardeners reported seeing squash bugs and five saw squash vine borers on their plants. Powdery mildew covered plants late in the season for half of the gardeners. Positive comments made by gardeners about the variety include the following: "Easy and tasty," "Best Production of all of the varieties with minimal powdery mildew," "Space saver bush," "Good germination, easy to grow, good taste." "Vigorous plants, seem to have some disease resistance," "Healthy, firm, good color."

#2. Honeyboat (DK)

'Honeyboat' Delicata squash was a very close second in the ranking. Its germination rate was 63%, and its first flowering date was July 19. Its average fruit diameter was 5.37 inches, average length was 8.09 inches, and average weight was 15.01 ounces. Average number of fruit per plant was 5.79. A majority of the gardeners gave 'Honeyboat' a mix of middle range numbers for taste, texture and flavor. 16% of gardeners reported problems with squash bugs and squash borers. 18 gardeners reported powdery mildew, with several concluding it was brought on by the increased rain/humidity patterns later in the summer. Positive comments made about 'Honeyboat' by gardeners included the following: "Best flavor/texture," "Good germination, perfect size, sweet and flavorful, beautiful color," Sweet, nice texture, good squash taste, tender," and "DK had the most pleasant taste/texture combination."

#3. Johnny's JS (MB)

'Johnny's JS' Delicata squash was a very close third in the ranking. Its germination rate was 47%, and its first flowering date was July 23. Its average fruit diameter was 5.58 inches, average length was 6.71 inches, and average weight was 13.79 ounces. Average number of fruit per plant was 6.15. Its ranking for sweetness was hard to tell for numbers from 1-5, as bland to sweet were almost equal. Most gardeners ranked it as average for flavor and texture. Insect damage was similar to the first two varieties with squash bugs and squash borers showing up. Powdery mildew also came in the late season with humidity and rain. Positive comments on this variety included the following: "Best in size, texture and flavor," "I liked the taste and texture of MB as well as the good production," and "Overall a healthy, productive plant."

#4. Sweet Potato (LG)

'Sweet Potato' had a germination rate of 64%, and its first flowering date was July 18. Its average fruit diameter was 5.49 inches, average length was 6.63 inches, average weight was 14.58 ounces, and total average number of fruit per plant was 7.68. Sweetness was in the average range along with flavor. Texture numbers ranged more mushy than the first four varieties. Insect and disease issues were at the same rate as the first four varieties. Positive comments for 'Sweet Potato' included the following: "Delicious! Best yield and disease tolerance", "Great taste, vigorous plant, good yield and easy."

#5. Zeppelin (JH)

'Zeppelin' had a germination rate of 73%, highest of the varieties, and its first flowering date was July 19. Its average fruit diameter was 5.56 inches, average length was 7.76, and average weight was 14.90. Average number of fruit produced was 6.89 per plant. Sweetness ranking was average for a majority of gardeners, and the same was true for flavor and texture. Insect damage was the same as the above three varieties. Powdery mildew came at the end of the season. 'Zeppelin' had the following sample comments from gardeners: "Best flavor," "Chose this one as best for taste of squash."

#6. Jester (ST)

'Jester' had a germination rate of 67%, and a first flowering date of July 20. Average diameter of squash was 6.99 inches, average length was 6.09 inches, and average weight was 19.73 inches.

The average number of squash per plant was 7.47. Flavor average was in the middle. Texture averaged a little lower than the other varieties. Damage from the squash bug was equal to other varieties but a little higher for the squash vine borer. Powdery mildew issues were the same as the other varieties. Comments made about Jester include the following: "Best taste and texture and most flesh inside the squash," but another gardener said "There is very little meat to the squash. The other types of squash are much tastier and have more meat." Other comments include "Large, great shape, lots of flesh, delicious."

DILL: summary of results as submitted by a seed trial committee member

One hundred gardeners requested dill seeds for trial. Six different varieties of seed were sent out to each. Fifty-six testers successfully grew dill and submitted data for this trial. Several trials failed because of poor germination, heavy rain, hail, squirrels, rabbits, birds or drought.

The dill seeds were direct-sown outdoors as soon as the soil was workable, which was around May 14th. Dill seeds are small so evaluators planted an average of ten seeds. Germination rates were poor (about 30%), which is common for dill. Aside from germination difficulty, many commented that dill is easy to grow and productive with large seed heads.

Harvest time of dill foliage is arbitrary so there was a huge range of when gardeners first harvested foliage, from May 19th to October 15th. The average date of first foliage harvested for all varieties was about July 13th (range from 7/12 – 7/15), and the average date of last foliage harvest was approximately September 15th across all six varieties.

Harvest of seed heads also showed a huge range of first harvest dates from July 1st to October 15th. The average date of first seed head harvested was about August 16th (range from 8/14 – 8/19), across all varieties. The average date of the last seed head harvest was approximately September 15th for all six varieties. No variety produced a seed head significantly earlier.

There are basically four ways that dill is used: the fresh foliage was the top use at 14%-21%, seed heads for pickling 10%-17%, dried seeds 5%-10%, and dried foliage (dill weed) 2%-7%.

Most dill plants grew quite tall to about 3 feet. Fernleaf was the exception, averaging about 25" and was less prone to flopping over or wind damage.

Insect and disease damage were minimal. There was only a very small percentage that reported a slight amount of insect pest problems on a few of the varieties. Seventeen reported seeing a swallowtail butterfly or caterpillar present. Most growers reported no disease problems.

Testers were asked to evaluate all six varieties for flavor of both the foliage and the seed heads on a scale of 1 to 5. This proved to be a difficult task! All six varieties scored the same at 3 for flavor of foliage and flavor of seed head. A random few reported sweet flavor, or grassy flavor, or anise flavor. There was no conclusive agreement on the best flavor.

All varieties scored about the same on the question of "would you suggest this variety to a friend?" Only about half of the growers answered this question. Of those who did, all varieties had about twice as many saying yes vs no.

Overall ranking was only scored by 33 of the 56 who submitted data. 'Teddy' was a slight favorite. The other five varieties, based on overall rank, were very close in scoring – no real discernible difference! Also, they were fairly close on taste and the question of whether they would grow them again.

Codes for Dill: ST = Teddy, MB = Bouquet, LG = Thaliat, JH = Fernleaf, CF = Delight, DK = Greensleeve

#1. Teddy (ST)

Scored the highest with the most #1 votes. 78% of evaluators said they would grow it again. There is no clear reason why this variety was chosen #1, scoring the same as the other varieties on flavor of foliage and seed head, and taste/texture.

#2. Bouquet (MB)

A distant second place based on overall rank. 65% said they would grow this variety again.

#3. Thalia (LG)

Scored a close third place on overall rank. 69% said they would grow this variety again.

#4. Fernleaf (JH)

A statistical tie for fourth place. Only 55% of evaluators would plant it again.

#5. Delight (CF)

A statistical tie for fourth place. However, 72% would like to grow this variety again.

#6. Greensleeves (DK)

A statistical tie for fourth place. Only 57% of evaluators said they would grow it again.

A lot of contradictory comments, i.e. great taste – no taste, terrible germination – good germination. "A lower germination rate than I'd recommend but it is such a superior plant that it was worth the try." "Crows pulled out all seed labels; unable to know which seed variety is which but 2 did stand out!"

CAYENNE PEPPERS: summary of results as submitted by a seed trial committee member

For the first time Master Gardeners trialed cayenne peppers. Fifty Master Gardeners requested seeds; thirty-eight reported data. Thirty were able to produce fruit for taste testing. Seeding instructions were to sow seeds indoors 8 weeks before the frost-free date. Seeds were planted ¼" deep in a pre-moistened, sterile potting mix. Bottom heat was suggested to aid germination as was overhead light for the seedlings. Seedlings were planted 12" to 18" apart in a sunny garden after hardening off. Consistent watering and mulch were suggested.

The average seeding date was March 21,2021. All varieties were mature and first harvested within a fourteen-day period in late August. Except for a few reports of end blossom rot, all varieties were free from insect damage and disease. In a bit of a surprise, every variety tested was recommended for planting by a gardener with limited experience, by over a two to one margin.

Codes for Cayenne Peppers: DK = Sweet Cayenne, CF = Moule's Red Hot, JH = Red Flame, MB = Large Thick Red, ST = Mesilla, LG = Red Rocket, MB = Large Thick Red

#1. Sweet Cayenne (DK)

Perhaps its lack of heat led to this variety being rated #1. (We are Minnesotan, after all.) That said, a third of taste testers insisted it was "very hot." Germination of 'Sweet Cayenne' seeds was 59%. Ripe fruit was generally 7" long and 1" wide, about average for the varieties tested. One Master Gardener commented, "Plant grew well, produced a lot of fruit if it was staked up. No pests. This pepper got hotter the longer it was on the plant."

#2. Moule's Red Hot (CF)

Germination of Moule's Red Hot was 62 %. Many Master Gardeners warmed to the pepper's heat. 60% said they liked this variety and would plant it again. In general, this plant was smaller than the other varieties, but "lots of peppers, not too hot, plant good size"

#3. Red Flame (JH)

Despite being the most prolific pepper plant, 'Red Flame' received a favorable rating from only 42% of Master Gardeners. It was the smallest, measuring just under an inch in width and 5 inches long. Germination was 63%. This variety was usually the first to be harvested. Some comments were "tasty and lots of peppers" and "Vigorous, productive, easy-care plant, nice hotness."

#4. Large Thick Red (MB)

This variety was the largest of the group, 1 ½" wide and 7" long. 'Large Thick Red' was also a pepper that most testers said was not very hot. Germination was 64%. "Good germination, low maintenance, was my favorite pepper" was a typical comment as 74% of Master Gardeners recommended this variety.

#5. Mesilla (ST)

'Mesilla' was the variety with the highest germination rate, 73%. It was not rated very hot and produced fruit last. 62% liked this pepper; "Beautiful peppers, sweet and hot fruit." "Prolific and tasty peppers."

#6. Red Rocket (LG)

'Red Rocket' was a smaller plant that produced many peppers. Most testers said this variety was the hottest. Only 30% said they liked it, and just over half would plant it again. Master Gardener comments included: "really hot peppers, too hot for me, all of the seeds sprouted and low maintenance.", and "Nice size for using in cooking".

GROUND CHERRIES: summary of results as submitted by a seed trial committee member

Ground cherry seeds were started indoors 6-8 weeks before the frost-free date in our area. Plants were hardened off and planted 24 inches apart in a sunny garden. Mulch around the plants in the form of straw, mulched leaves or other organic materials was strongly advised to conserve moisture and to protect against pests and weeds. Mulch also helps with harvest since fruit falls to the ground when ripe. Harvest time is approximately 75 days after plants are transplanted into the garden.

There are many ways to use ground cherries including raw straight out of the garden, in salads, grilled, and in desserts. Ground cherries are full of nutritional value. One cup of ground cherries provides 74 calories, 1 gram of fat, 3 grams of protein, and 16 grams of carbohydrates. The ground cherry is an excellent source of Vitamins A, C, and B-3 (Niacin). They are also a good source of Vitamins B-1 (Thiamin) and offer Vitamin B-2 (Riboflavin) and iron, calcium, and phosphorus. Due to the orange-golden color from phytochemicals called carotenoids, the ground cherry has many anti-inflammatory and immune-boosting properties and can help protect against the risk of heart disease and poor eye, skin, and bone health. (Nutrition values from Permaculture Research Institute).

The information below includes test results from the six varieties of ground cherries tested by 41 participants. It includes termination, taste, plant growth, plant health and overall ranking. A sampling of comments from the participants is included in individual variety descriptions.

Codes for Ground Cherries: MB = Pineapple, LG = Loewen Family, DK = Strawberry Husk Tomato, ST = Goldie, CF = Aunt Mollie's, JH = Peruvian

#1. Pineapple (MB)

The 'Pineapple' ground cherry variety barely beat out ground cherry 'Loewen Family' (LG) ground cherry in rank. It had a germination rate of 59%. Its harvest rate was 26 cherries per plant with a cherry diameter of .53 inch. Plants had an average height of 22.31 inches. "Fruitiness" value was average for the majority of gardeners, and texture was fairly firm. Very little insect damage was reported, and only one gardener reported disease issues. Comments on the Pineapple variety include the following: "Easy to grow," Disease free," "Good yield and easy to grow, very nice flavor," "It was a small, compact plant," and "Very fruitful, great taste."

#2. Loewen Family (LG)

The 'Loewen Family' ground cherry was a very close second. It had a germination rate of 43%. Its harvest rate was 26 cherries per plant with an average cherry diameter of .55 inch. Average plant height was 19.54 inches. Fruitiness and texture were ranked as average for the cherries by a majority of the gardeners. Only two gardeners reported problems with insects, and two had disease issues. Comments from the gardeners included "Produced well, flavor good, sweet but with a tang. Earliest edible fruit."

#3. Strawberry Husk Tomato (DK)

The 'Strawberry Husk Tomato' ground cherry had a germination rate of 40%. Its harvest rate was an average of 23 cherries per plant, and they had a diameter of .56 inch. Average plant height was 19.15 inches. Fruitiness was generally rated as average by the majority of gardeners, and numbers indicated that the texture was soft. Three out of 23 gardeners had some insect issues, and only one reported disease issues. Comments from the gardeners included the following: "Easy to Grow, no diseases, vigorous plants, good taste," "This is my favorite variety," and "Vigorous plant with high yield."

#4. Goldie (ST)

The 'Goldie' ground cherry had a germination rate of 50%. Its harvest rate was an average of 25 cherries per plant with an average diameter of .51 inch. Average plant height was 21.72 inches. 40% of the gardeners gave Goldie a high (4 out of 5) fruitiness rating. Texture was an average rating for a majority of the gardeners. Four gardeners out of twenty-five had insect damage, and three had disease issues.

Comments from the gardeners included the following: “I ranked this ground cherry as #1 for its taste,” “ST delivers a burst of fruity flavor, good germination and beautiful dark green foliage.”

#5. Aunt Mollie’s (CF)

‘Aunt Mollie’s’ ground cherry had a 59% germination rate. Its harvest rate was an average of 27 cherries per plant with an average diameter of .53 inch. Average plant height was 20.41 inches. Fruitiness rating was average, along with texture as average. Three gardeners out of twenty-seven reported insect issues. Only one gardener reported disease issues. A few comments from gardeners on this variety are as follows: “CF was my favorite! It had the most fruit of all and the fruit matured more than the others.” Delicious, fruity flavor, crisp texture.”

#6. Peruvian (JH)

‘Peruvian’ ground cherries had a germination rate of 34%. Its harvest rate was about 20 cherries per plant with an average diameter of .57 inch. Average plant height was 22.83 inches. Fruitiness rating was average, and texture fell into the average range as well. Two gardeners out of 20 reported insect damage, and only one had disease issues. JH did not receive comments in the end notes.

LACINATO KALE: summary of results as submitted by a seed trial committee member

Lacinato kale is considered by some to be the sweetest kale. It can be used either raw or cooked. It is great in salads, or cooked in soups, as chips, in hot dishes and more. It is considered a super food that provides vitamins A, K, C and B6. There is a lot to like here!

Lacinato kale can be easily grown by home gardeners. It likes cool temperatures and can be directly sown in early spring in full sun to partial shade. Lacinato kale is both heat and cold tolerant so it can be grown throughout the growing season; spring, summer and into the late fall/early winter. There are a number of varieties now available and most are reported to produce good yields. This year, Master Gardener Seed trials included six varieties of lacinato kale. The results for each variety and a comparison of all six follow below.

Seventy-two gardeners participated in the lacinato kale trials and submitted data at the end of the season. As directed, the seeds were directly sown in the spring once the soil temperature reached 45 degrees. All gardeners planted the first week of

May. All gardeners reported that their plants received 6 hours of direct sun each day. All gardeners reported their first harvest from July 13 to July 17, depending on the variety. All gardeners also reported their last harvest from 9/30 to 10/7, again depending on the variety. The kale plants may well have continued to produce, but since submission of all data was requested by 10/15 gardeners needed to stop collecting data in early October.

Germination rate for all varieties was somewhat lower than expected (ranging from 30% - 47% depending on the variety). This may be related to the challenging weather conditions we experienced this year (heavy rains early on , followed by very dry, hot conditions throughout the summer). Generally, gardeners rated the production of their plants to be quite good, although there were differences between varieties. Those will be described below.

Very little disease damage was reported by participating gardeners. Insect damage was also low, although some gardeners reported large holes in the leaves of their kale which they attributed to cabbage worms. Overall, gardeners reported that they would grow 5 out of the 6 varieties again. They would also recommend 5 out of 6 varieties to a friend with limited gardening experience.

Codes for Lacinato Kale: ST = RAINBOW LACINATO, MB = DAZZLING BLUE, CF = BLACK MAGIC, DK = TOSCANO, LG = NERO DI TOSCANA, JH = TRONCHUDA

#1. RAINBOW LACINATO (ST)

Rainbow Lacinato took first place. It had a germination rate of 45% which was slightly below Dazzling Blue. Average date of planting was 5/6/21 and average days to first harvest was 70. Production for this variety was ranked fairly high. Plants were full and had abundant leaves. The leaves were described as paddle-shaped with curly edges. The leaf color was blue green with a purple stem. Overall kale flavor was rated as mild to medium with low bitterness. It was also described as having good tenderness. Gardeners reported that they liked this variety very much. Little insect damage was reported for this variety (some cabbage worms). In addition, little to no disease was reported by gardeners. Seventy-two percent (72%) of respondents said they would grow this variety again and 75% said they would recommend it to a friend with limited gardening experience.

#2. DAZZLING BLUE (MB)

Dazzling Blue was tied for the first place rank, but we knocked it down to second place because a significantly lower percentage of participating gardeners said they would grow it again. It had a germination rate of 47% which was the highest of all the varieties tested. Average date of planting was 5/9/21 and average days to first harvest was 69. Production for this variety was reported to be high to very high. Gardeners reported that plants were full with lots of leaves and production was abundant. Leaves were described as medium green with purple veins. Leaves were also described as slightly wrinkled with ruffled or scalloped edges. Overall kale flavor was described as mild to medium with low to medium bitterness and tenderness. Participants said that this variety "had some crunch". Gardeners reported little damage from insects (some cabbage worms) or disease in this variety. Sixty-five percent (65%) of respondents said they would grow this variety again and 69% said they would recommend it to a friend with limited gardening experience.

#3. BLACK MAGIC (CF)

Black Magic had the third highest overall rating from participating gardeners. (Black Magic came in close behind Dazzling Blue and Rainbow Lacinato.) It had a germination rate of 36%. Average date of planting was 5/4/21 and average days to first harvest was 71. Production for this variety was reported to be quite good. Gardeners said the plants were full, with lots of leaves, and production was abundant. They stated that the leaves were upright and green with purple/pink veins. Most gardeners reported average kale flavor, bitterness, and tenderness for this variety. Leaf texture was described as "chewy". Gardeners reported a few problems with insects (cabbage worms) and little to no damage from disease. Sixty-four percent (64%) of responders said that they would grow this variety again, and 71% said they would recommend it to a friend with limited gardening experience.

#4. TOSCANO (DK)

Toscano was ranked fourth overall by participating gardeners. It had a germination rate of 36%. Average date of planting was 5/4/21 and average days to first harvest was 70. Production for this variety was reported to be quite good. Gardeners said the plants were full, with lots of leaves and production was abundant. They stated that the leaves were paddle shaped and wrinkled with a medium green color. Overall kale flavor was reported to be average to good with lower bitterness and average to low degree of tenderness. Leaf texture was described as "chewy". Participants reported little damage from insects or disease, although some reported large holes in leaves which they attributed to cabbage worms. Fifty-nine percent (59%) of responders said that they would grow this variety again and 61% said they would recommend it to a friend with limited gardening experience.

#5. NERO DI TOSCANA (LG)

Nero Di Toscana was ranked second to last overall by participating gardeners. It had a germination rate of 33%. Average date of planting was 5/3/21 and average days to first harvest was 75. Production for this variety was reported to be average to low (plants were less full, with fewer leaves and less abundance). Gardeners stated that the leaves were smooth and feather or paddle shaped. Gardeners reported that the leaf color was light green. Overall kale flavor was reported to be average to low with medium-low bitterness and good to average degree of tenderness. Leaf texture was most frequently described as "chewy" by gardeners. Participants reported little damage from insects (some respondents noted large holes in leaves which they believed to be cabbage worms) and little damage from disease. Fifty-eight percent (58%) of responders said that they would grow this variety again and 58% said they would recommend it to a friend with limited gardening experience.

#6. TRONCHUDA (JH)

Tronchuda was ranked last overall by participating gardeners. It had a germination rate of 30%. Average date of planting was 5/5/21 and average days to first harvest was 70. Production for this variety was reported to be average to low (plants were less full, with fewer leaves and less abundance). They stated that the leaves were large and round with branching white veins. Gardeners reported that leaves were a lighter green to blue/green or grayish in color. Overall kale flavor was reported to be average to low with medium-low bitterness and good to average degree of tenderness. Leaf texture was described as "chewy" by some gardeners and "soft" by others. Veins were described by some as "fibrous". Participants reported a little more damage from insects (primarily cabbage worms or loopers) and a little damage from disease. Thirty-six percent (36%) of responders said that they would grow this variety again and 36% said they would recommend it to a friend with limited gardening experience.

ONIONS: Summary of results as submitted by a seed trial committee member

Bulb onions, from seed, were trialed this year. Eighty-four Master Gardeners requested seeds: Fifty-nine reported data, and forty successfully grew bulbs for further evaluation. Volunteers were asked to plant the onion seeds as soon as the seeds arrived by mail. Using pre-moistened sterile potting mix, seeds were placed approximately ½" apart and covered with about 1/4" of moist potting mix. Then the tray was covered with plastic wrap and set on a warming mat where there was plenty of light. The planting instructions concluded with hardening off seedlings before transplanting into a full-sun garden after all danger of frost had passed. Frequent watering and mulching with compost were suggested.

The average seeding date was March 3, 2021. All varieties were ready for testing at the end of August. Volunteers reported very little insect or disease in the six varieties. Master Gardeners' opinions were split on growing onions from seed. In general, there were as many "too hard to grow, not worth it" comments as there were "easy to grow, nice bunch of onions" comments for each variety.

Codes for Onions: LG = SV4643NT (from Jordan's), CF = Rosa di Milano, DK = Milestone, ST = White Sweet Spanish, JH = Walla Walla, MB = Aspen

#1. SV4643NT (LG)

This red variety was ranked the best, and 61% of the Master Gardeners would recommend it to others. Germination was reported at 68%. The average bulb size was 2 ½ inches. Comments from Master Gardeners included "large productive onion with a perfect germination and harvest rate, easy to grow."

#2. Rosa di Milano (CF)

Rosa di Milano, a red variety, was rated #1 in both flavor and crispness. 77% of the Master Gardeners said they would plant this variety again and 72% would recommend it to a friend with limited gardening experience. Comments were "This was the best producer, had a lovely purple color, and it had a nice, pungent red onion flavor."

#3. Milestone (DK)

Germination on Milestone, a white variety, was 66%. Although bulb size was on the small side, 68% would plant it again. Aroma and pungency were rated mild. Flavor was average. "Good yield, good medium flavor, good germination, good size, easy to grow."

#4. White Sweet Spanish (ST)

This white variety was ranked 4th. In flavor and crispness, it came in second. Germination was 65%. 75% of the Master Gardeners would grow it again and would recommend it to others with limited gardening experience. Comments ranged from "very hot onion" to "A large, early white onion with nice, mild flavor."

#5. Walla Walla (JH)

Walla Walla, another white onion, produced the most bulbs and the largest, just under 3". Germination was 65%. Crispness and flavor were ranked near the bottom in our test, however. 50% of the testers would plant it again. One comment was "If you want a mild onion, this might be a good option."

#6. Aspen (MB)

A low germination rate and smallish white bulb may have led this variety's low ranking. Also, testers did not like the flavor or the crispness. Even so, 58% of the Master Gardeners would plant it again. A comment was "low germination and harvest rate - started with 15 seeds and harvested 7 onions."

WHITE COSMOS: summary of results as submitted by a seed trial committee member

Tall white cosmos flowers float like clouds in the late summer garden, bringing a fresh look when other plants have begun to tire. 68 Master Gardeners from around the state of Minnesota submitted data for this trial. They sowed the cosmos seed directly into full-sun areas of their gardens. The average date of sowing was May 23. Germination rates varied widely, from a low of 11% to a high of 56%.

There were no significant differences between the varieties in terms of insect or disease problems. The 10%-20% of participants who reported insect problems named aphids, Japanese beetles, and a few cutworms as the culprits. Disease was virtually non-existent. Bees loved the flowers (as did a few hummingbirds). Cosmos, in general, did well in the hot and dry conditions we experienced in 2021, though they required some irrigation.

Plant height varied from 27.2" to 44.6". Flower color ranged from pure white (only two varieties) to soft pink to "trimmed in purple." Flower diameter varied widely, from 2" to almost double that (3.8"). All varieties bloomed at roughly the same time, beginning in late July, and all were still going strong through the first week of October.

Codes for White Cosmos: JH = Cupcake White, DK = Double-Click Snowpuff, LG = White Afternoon, MB = Purity, CF = Pied Piper Blush White, ST = Sonata White Dwarf

#1. Cupcake White (JH)

Cupcake White (JH) took first place. While not the most floriferous of the varieties, it had the highest germination rate (56%) and the largest flowers (3.83" diameter). Almost half of the participants said it was fragrant, and many reported some purple in the flower. Many described the flower as "cup-shaped." At 41.6" tall on average, it was in the middle of the range. 30% of growers reported needing to stake this variety. 82% would grow Cupcake White again; 65% would recommend it to a friend with limited gardening experience.

Those who ranked 'Cupcake White' as their first choice said: easy to grow; good bloomer; large, beautiful flowers; sturdy plants; nice fragrance; did well in hot summer.

#2. Double-Click Snowpuff (DK)

Double-Click Snowpuff was a close second. Germination was 54% and it was the most floriferous variety. It grew 40.3" tall on average and was voted the favorite cut flower in the trial. The carnation-like (or mum-like) flower was on the small side, measuring 2.24" in diameter, but it was described as "frilly" and sometimes trimmed in purple. 40% of growers said it was fragrant. 67% would grow it again, and 66% would recommend it to a friend with limited gardening experience.

Those who chose 'Snowpuff' as their first choice because: easy and beautiful; loved the fluffy look of the double, carnation-like flower; earliest blooming; healthiest and best-looking foliage; most flowers; lasted the longest in a vase.

#3. White Afternoon (LG)

Germination was 52%, and it was the earliest of the varieties to bloom. It was the second-most floriferous over the season. 45% of growers thought it was fragrant. The flowers were described as white with light pink centers. The plants averaged 38.9" tall, and the blossoms measured 2.5" in diameter. 63% of participants said they would grow 'White Afternoon' again, and 66% would recommend it to a friend with limited gardening experience.

Those who ranked 'White Afternoon' as their favorite variety said it: smells good, requires no staking; abundance of flowers; great color, fullness, and height; most sturdy.

#4. Purity (MB)

Purity came in just slightly behind #3. Germination was only 45%, and it was average in its number of blossoms. The flowers measured 2.6" in diameter and were pure white. 40% called them fragrant. At 44.6" tall, this was the tallest variety in the trial, and 48% of growers staked it. 62% of participants said they would grow it again, and 66% said they would recommend it to a friend with limited gardening experience.

Those who chose 'Purity' as their favorite said: plants were sturdy and tall; flower preference; quick to flower; great height; prolific flowers; multiple flowers; pure white – outstanding; care-free.

#5. Pied Piper Blush White (CF)

Germination rate was 49%, and it tied with Cupcake White for least floriferous. It also had the smallest flowers, measuring 2.1" in diameter. 44% of growers said it was fragrant, and 10% described the flowers as soft pink. The plant grew to a height of 37.1". 54% of participants said they would grow it again, and 50% said they would recommend it to a friend with limited gardening experience.

The few who chose 'Pied Piper Blush White' as their favorite variety said: Nice mid-sized cosmos plant with vibrant colors and a sweet fragrance; I liked the shell-shaped flowers; large abundant flowers and fragrant.

#6. Sonata Dwarf White (ST)

Sonata Dwarf White did very poorly in this trial and came in a distant 6th. the germination rate was a totally unacceptable 11%. It featured the only other pure white flower, which measured a healthy 2.73" in diameter. Only 30% of gardeners said it was fragrant. From the small amount of data we did collect, the average height of the plant was 27.2" – the shortest variety, but not surprising for a variety labeled "dwarf". Understandably it was the least likely variety to be staked, but 40% of gardeners still reported doing so. Its blooming rate was about average. The number of participants who successfully grew this variety to maturity was too small to make any "grow again" or "recommend to a friend" analysis valid.

Two participants chose 'Sonata White Dwarf' as their favorite. They said: easy, low-maintenance, pretty, abundant.

TALL YELLOW MARIGOLDS: summary of results as submitted by a seed trial committee member

Tall yellow marigolds, *Tagetes erecta*, are a bright, easy-to-grow annual flower frequently used in the back of the garden. Often called "African marigolds," they are actually native to Mexico and Central America, and were sacred to the Aztecs, who used them as a medicine and as a ceremonial offering to the sun gods. Marigolds are still called "the herb of the sun" because of this. In Mexico, African marigolds are a traditional flower placed on altars on The Day of the Dead. African marigolds are taller and more drought tolerant than French marigolds (Tagetes patula).

During the 2021 season, 73 Master Gardeners around the state of Minnesota successfully grew this trial, testing six different varieties against one another. The seeds were started indoors in sterile potting mix under lights 4-6 weeks before the average frost-free date. After being gradually hardened off for several days, the seedlings were transplanted into sunny gardens and spaced 10"-12" apart.

The average seed sowing date was April 4. The average date on which the seedlings were transplanted into the garden was May 23. Germination rates ranged from 49% to 78%. Plant height ranged from 25.6" to 33.1". Flower color was reported variously as gold, yellow, and "highlighter yellow". Flower diameter varied from 2.5" to 3".

The blooming period began in late June and peaked in late August and September.

Codes for Tall Yellow Marigolds: ST = Coco Deep Yellow, MB = Giant Yellow, CF = Smiles, DK = Mary Hellen, JH = Tall Sierra, LG = Yellow Supreme

#1. Coco Deep Yellow (ST)

Coco Deep Yellow was the run-away winner of this trial. At 78%, it had the best germination rate, and it was the only variety that achieved the highest possible rating of bloom abundance. It was also the tallest variety, measuring 33.1" tall, the widest (22.9"), and had the largest flowers (3.06" diameter). The flowers were described as bright yellow pom-poms that could be seen from a distance. Some gardeners found them to be pleasantly fragrant.

Japanese beetles were found on this variety, but many gardeners described Coco Deep Yellow as the most JB-resistant of the group. Disease was very rare.

86% of participants said they would grow Coco Deep Yellow again, and 80% would recommend it to a friend with limited gardening experience. The most frequent comments were: long-lasting, consistently lovely, BIG, strong, healthy, prolific, most flowers, lush growth, easy to pick, rich dark green foliage, held up well all season, almost shrub-like, showy.

#2. Giant Yellow (MB)

Giant Yellow took a rather distant second place. Germination was only 56%, but 75% of participants said they would grow it again and 75% said they would recommend it to a friend with limited gardening experience.

The typical Giant Yellow plant was described as 27.6" tall, 18.9" wide, with yellow globe-like flowers measuring 2.93" in diameter (second largest). It was rated as the second most abundantly-blooming variety and began flowering slightly earlier than the other varieties. It experienced only a small amount of disease, but that was slightly more than most other varieties. Japanese beetles were a pest but no more so than average.

A number of gardeners ranked Giant Yellow as their first choice, saying: super easy, beautiful, flowered all summer, full and bright, healthy foliage, long-blooming, sometimes needed support.

#3. Smiles (CF)

Smiles placed third, in spite of its low germination rate of 49%. It had the only flower described as "gold," which measured a very average 2.6" in diameter. The typical plant was 25.6" tall (shortest in the trial) and 20.3" wide. Its abundance-of-bloom rating was in the middle of the pack for the entire growing season. Of participants, 62% would grow Smiles again, and 60% would recommend it to a friend with limited gardening experience.

Fans of Smiles loved it because: beautiful color, abundant, smells lovely, showy, beautiful all season, still going great in October.

#4. Mary Hellen (DK)

Mary Hellen was almost tied with #3 Smiles. Their flowers were the same size, but Mary Hellen was a little taller (28.1") and narrower (19.8"), and its flowers were yellow with ruffled petals. Germination was the second best in the trial, at 72%. Abundance-of-flower ratings were in the middle of the pack throughout the season. Japanese beetles were a minor nuisance, and disease was rarely reported.

Of participants, 59% would grow Mary Hellen again, and 55% would recommend it to a friend with limited gardening experience. Those who loved it described it as: easy to grow, fragrant, not a typical marigold, easy, compact, lots of blooms, lasts all season, cheerful, hardy.

#5. Tall Sierra (JH)

Tall Sierra was close behind #3 and #4, and it was the one described as neon ("highlighter") yellow. Germination was a pretty average 59%, and its abundance-of-flowering was also average throughout the growing season. Its height (26.7") and width (19.2") fell in the middle of the pack, but its yellow flower was the smallest (diameter 2.5"). Very little disease was reported, and Japanese beetles bothered them no differently than other varieties.

Of participants, 58% would grow Tall Sierra again, and 56% would recommend it to friends with limited gardening experience. People who loved it referred to it as: Easy, good performance, nice size, good fragrance, liked size and form of plant, bright, both single and double flowers.

#6. Yellow Supreme (LG)

Yellow Supreme came in a distant last. Only 46% of gardeners would grow it again, and only 37% would recommend it to a friend with limited gardening experience. Very little disease was reported, and it fared no worse with Japanese beetles than the other varieties. Its height was very average (26.6"), but it was the narrowest (17.8" wide). Its soft yellow flower measured a moderate 2.61" in diameter. Its germination rate was a not-too-bad 66%. Where it lost favor was in abundance-of-bloom. Across the growing season, it was rated either equal to or below that of the other varieties. It still had a few friends who described it as: Easy, showy, lanky, pretty. Many more described it as disappointing, especially compared to the other varieties.

Personal takeaways

Here are personal takeaways shared by the Master Gardeners that participated in the trial:

Delicata squash: If you love it, grow whatever variety you can find seeds for. The differences between/among the six varieties are negligible. The winner, Bush AAS 100, has the advantage of having a bush form rather than being a sprawling vine. As an urban gardener, that's enough to put it at the top of the list, but your considerations may differ.

Dill: They all grew about the same. Master Gardener participants rated the six varieties based on the flavor of both the leaves (aka dill weed) and the seeds. They all performed about the same. 'Teddy' had a razor-thin edge on 'Bouquet', but the latter is much more widely available to the public. No need to purchase the slightly pricier 'Teddy.'

Cayenne peppers: They're supposed to be hot, right? I'm thinking that Minnesota is the wrong place to test hot peppers for hotness. 'Sweet Cayenne' was the winner. We can report that it is very tasty!

Ground cherries: We erred in requiring that Master Gardener participants start them indoors. Turns out they do best when directly sown into the garden. Unlike their tomato cousins, they mature just fine in our short growing season without the advantage of an indoor start. And they self-seed like crazy!

Lacinato kale: Despite a very challenging growing season, five of the varieties fared very well. Holes created by few cabbage worms here and there may have kept the kale from grocery store shelves, but it tasted just fine. A majority of Master Gardeners would grow all but one of the varieties again. Hardy (and delicious) plant!

Onions (the kind that form bulbs): The two red varieties finished first and second – ahead of the four whites. Looks like Minnesotans prefer red onions! Of course, who could resist the allure of a variety named "SV4643NT"? Be still, my heart! Alas, you probably won't find these seeds on the rack at Home Depot.

White cosmos: How to get a fresh look in your late summer garden? – plant white cosmos. All of the top four are good varieties. Enjoy reading about their specific characteristics and decide which belongs in your home garden. Your local pollinators will thank you.

Tall yellow marigolds: The stunning flowers of 'Coco Deep Yellow' will be great in the back of just about any garden, and they won't go unnoticed.

Thank you

The entire Seed Trials committee extends its sincere thanks to everyone who participated in the 2021 Seed Trials.

Respectfully submitted,

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